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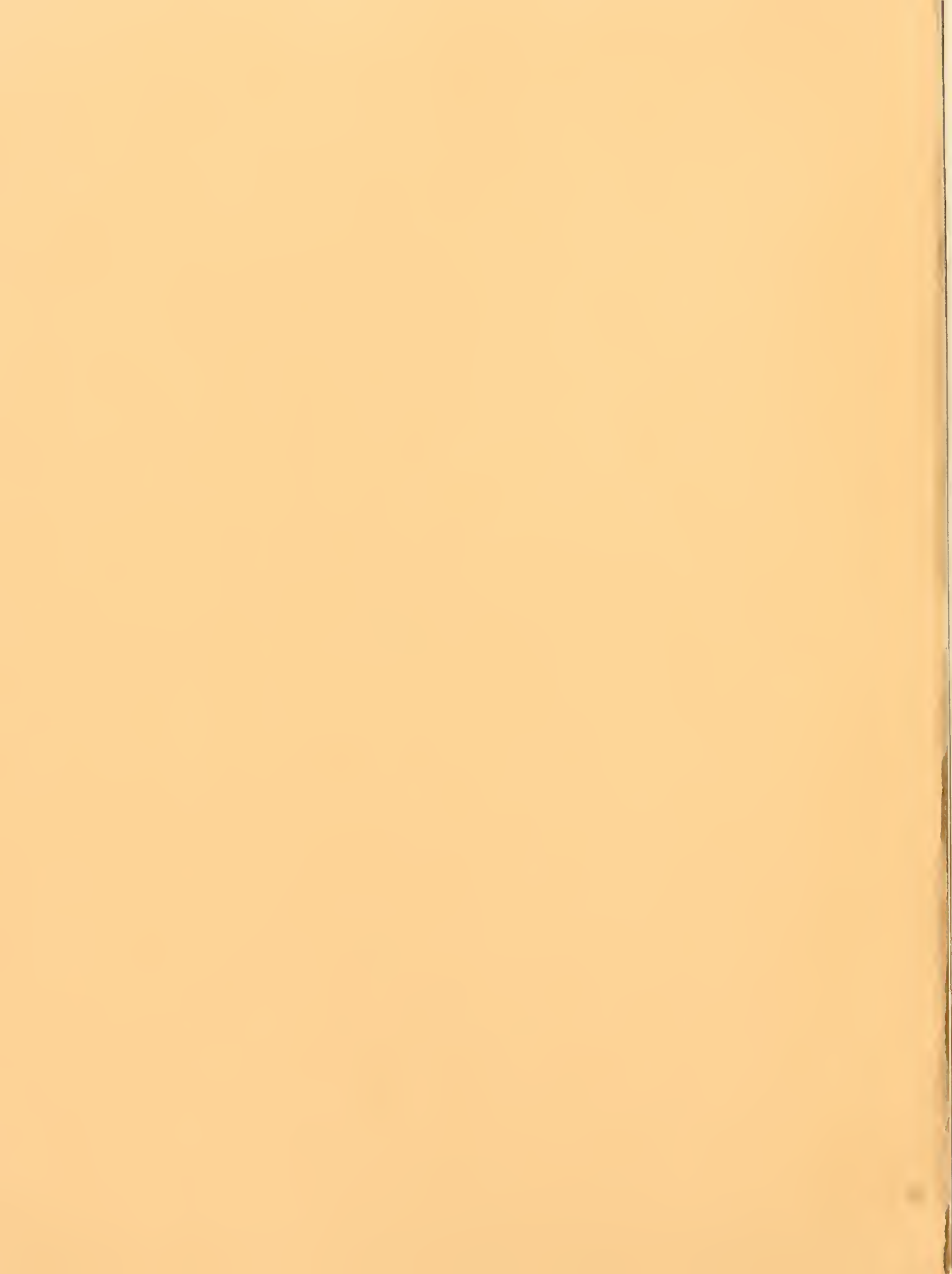
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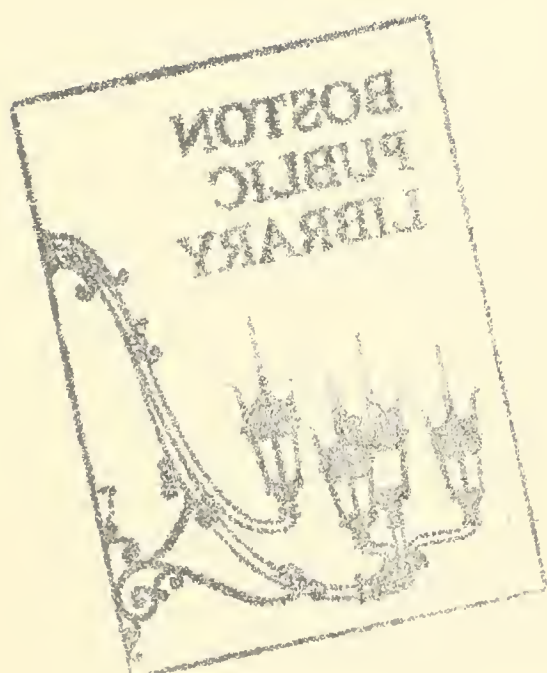
WORKING PAPER  
HOUSING/COMMUNITY DEVELOPMENT

IMPACTS OF HOUSING DEVELOPMENT ON  
COMMUNITY AND REGION



METROPOLITAN AREA PLANNING COUNCIL  
44 SCHOOL ST., BOSTON, MASS. 02108

September 1977



## FOREWORD

The Metropolitan Area Planning Council (MAPC) is greater Boston's officially designated regional planning agency. Its membership consists of 101 cities and towns; 11 local, regional and state agencies; and 21 gubernatorial appointees. The agency's officers are: George B. Bailey, President; Richard D. Dimes, Vice President; Robert B. Chase, Secretary; Harry A. Kelleher, Treasurer. MAPC's Executive Director is Carla B. Johnston.

This paper serves as background information for developing strategies related to housing/neighborhood preservation and development for the metropolitan Boston region. Other MAPC working papers discuss additional aspects of the region's housing problems. The project has been directed by Norma Bogen, formerly Director of Planning Projects and responsible for MAPC Housing/Community Development activities. Leonard Bogorad, Senior Planner, was responsible for writing the paper and the background research required for it.

MAPC's Technical Advisory Committee (TAC) on Housing is reviewing this paper. The TAC is comprised of the following members: Representative Barbara Gray (Chairman), Wallace A. Berger, Elizabeth Bransfield, Michael Campbell, Philip L. Clay, Reverend Thomas D. Corrigan, Representative Genevra Counihan, Eva Curry, Peter Damon, W. Michael Donovan, Rolf Goetze, Beverly Herbert, Jorge N. Hernandez-Martinez, Patricia Heydecker, Norman Homsy, Polly Jackson, David Lee, Professor Tunney F. Lee, John C. Magri, Alan McClennen, Jr., Norma Millett, Andrew Olins, Samuel E. Reinherz, Wayne Sherwood, Lois Stern, Amy Totenberg, James A. True, Constance Williams.

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## IMPACTS OF HOUSING DEVELOPMENT ON COMMUNITY AND REGION

### ABSTRACT

The Metropolitan Boston region is facing serious housing problems during the coming decades. Production of new housing will have to be at least double current levels if the region's housing needs are to be met.

These new housing units, in a range of densities, housing types, and prices, must be accommodated by the cities and towns of the region. This paper examines the potential impacts of the construction of a municipality's reasonable share of new housing and includes some approaches to minimize negative effects and encourage positive impacts.

The paper concludes that the needs of the region for new housing can be met, by sharing new construction throughout all municipalities of the region, without imposing significant net negative impacts on any one municipality or on the region as a whole. This can be accomplished by such approaches as clustered development, medium rather than low density, encouragement of a mixture of housing types, and consideration of potential impacts in advance of development.

Six categories of impacts are considered:

- The fiscal benefit/cost to the municipality in which the housing is constructed. Apartments and townhouses tend to "pay their own way" or provide a surplus. Single family homes, especially with large numbers of bedrooms, often result in a net cost to the municipality. This is primarily because single family homes, and multifamily housing units with larger numbers of bedrooms, tend to have more children of school age to place demands on the school system. Other factors that affect fiscal impact are also discussed.

The paper concludes that in general communities can avoid a net fiscal loss by providing for a mix of housing types and prices -- so that some types provide a surplus and some a deficit -- and by providing for fiscally beneficial non-residential development.

- The impact of the housing on the environment. In the past, many developments have resulted in environmental problems. New construction is needed, however. The paper discusses the potential impacts of housing development on the principal components of environmental quality. The paper lists some planning measures that can be carried out without significantly increasing the cost of housing to the consumer, but will permit housing to be provided throughout the region without significant harm to the environment.
- The impact of the housing on energy and other natural resources.
- The impact of the housing on transportation.



- Social impacts of the housing on the municipality and region. This section discusses the following social impacts: impacts on existing neighborhoods and neighborhood environments, the socio-economic composition of the municipality, and the influx of "different" residents. The paper concludes that with a reasonable sharing of the needed growth among all communities of the region, negative social impacts should generally be avoidable.
- Overall Impact of Housing Production on the Region. This section briefly discusses certain factors that are relatively unimportant from the community perspective (from which the bulk of the paper is written), but are important from an overall regional perspective, and vice versa.



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## I. INTRODUCTION

The Boston region is facing serious housing problems during the coming decades. Although the region's population is expected to increase at a rate of only 0.7% per year, because of changes in the age structure the number of households will be increasing at a rate of 1.4% per year. At the same time, some existing units will have to be replaced. To meet these needs, housing starts will have to average 18,000 to 23,000 units per year between 1970 and 1980, and 16,000 to 21,000 units per year between 1980 and 1995.\* This is much higher than current new construction rates.

If this housing is not provided, the region will face a mounting housing shortage, housing prices will continue to increase faster than incomes, and more and more households will be unable to afford satisfactory housing. Young households will be unable to stay in the communities where they grew up. Elderly homeowners will be forced out of their homes by increasing property taxes and heating costs, but reasonably priced apartments will be unavailable for them to rent. The scarcity and cost of housing will make the region less attractive to employers. Migration out of the region will accelerate.

This paper assumes that the housing needs of the region must be met. It examines the potential impacts of the construction of a municipality's share of housing to meet the needs in a range of densities, housing types and prices, and discusses some approaches to minimize negative impacts and encourage positive ones.

Six categories of impacts are considered: (1) The fiscal benefit/cost to the municipality in which the housing is constructed; (2) the impact of the housing on the environment; (3) the impact on energy and other natural resources; (4) the impact on transportation; (5) the social impacts on the municipality and region; and (6) the overall benefit/cost of the housing to the region.

## II. FISCAL BENEFIT/COST TO MUNICIPALITY

New housing may have a fiscal impact -- positive or negative -- on the municipality in which it is built.\*\* A number of studies\*\*\* indicate that most cities and towns could accommodate the mix and quantity of housing necessary to meet their share of the regional housing need and still derive a net fiscal benefit from the housing. This section outlines some of the major fiscal impacts and discusses various ways that a municipality can break even or benefit fiscally while still meeting its share of the regional housing need.

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\* These statistics are derived, and the region's housing need analyzed in detail, in the MAPC Working Paper, "Problems Involving the Supply of Housing in the Boston Region," August 1976.

\*\* This section considers the fiscal impact of development on the municipality. The paper does not attempt to deal in detail with the many factors that affect the cost of housing to the consumer and to other residents of the region other than through the property tax.

\*\*\* See, for example, New Jersey County and Municipal Government Study Commission, Housing and Suburbs; Levin, "Cost Revenue Impact Analysis;" and Crouch and Weintraub, "Cost-Benefit Analysis of a PUD." (Full citations are provided at the end of this paper).

## A. INCREASED MUNICIPAL COSTS

New housing adds both to municipal costs and to municipal revenues. The net fiscal impact is measured by balancing these two factors against each other. The following components contribute to the cost side of the balance sheet; in many cases the cost partially depends on the housing development density, pattern, or mix:

### 1. Utilities and Local Streets and Roads

New housing may require additional expenditures for sewers and water, other utilities, and local streets and roads, either by the builder or developer (and thus indirectly by the resident), or by the city or town. The pattern of development has a significant impact on the cost of required utilities (sewer, water, storm drainage, gas, electric, and telephone) and local streets and roads, if they are not already in place. For a given number of units, the capital costs of utilities and local streets are much lower at high densities than at low densities, since the lengths of pipes, streets, etc., are minimized. The capital costs of utilities and streets also appear to be lower in clustered developments that are planned to minimize the required lengths of utility pipes or square footage of paved areas.

### 2. Education

Some types of new housing construction add to the number of children who must be provided with education in a particular community. A number of studies have attempted to determine the factors that will predict the number of school age children in a development.\* In general it has been found that the fewer the bedrooms, the fewer the children. To some extent, the type of housing (single family, townhouse, garden apartment, etc.) also affects the number of children. Thus, a single family house with four bedrooms, for example, will on the average have significantly more children of school age than a two bedroom apartment. Factors other than number of bedrooms and housing type have been found to be relatively insignificant in studies of "market" (non-subsidized) housing.

Subsidized, family apartments tend to have more school children per unit than "market" apartments. Subsidized apartments may nevertheless have fewer school children per unit than single family homes. A Weymouth study,\*\* for example, found that single family houses had 1.09 school children per unit, "market" apartments had .05, public housing had .89, and mixed apartments (such as MHFA developments with low, moderate, and "market" income units) had .29. Non-elderly public housing had 1.70 children per unit, but this is balanced against essentially no school children

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\* See, for example, Sternlieb, et.al, Housing Development and Municipal Costs; Sternlieb and Burchell, "The Numbers Game: Forecasting Household Size"; and Levin, "Cost Revenue Impact Analysis."

\*\* Weymouth Planning Board, Impact of Apartments in Weymouth.



in elderly public housing, resulting in the overall figure of .89.

Another factor with particular relevance for subsidized housing is the secondary effect of new housing construction. If new housing is occupied by existing residents of the community, the net impact on the school system depends upon the number of school age children moving into the housing vacated by the families going into the new units. In the case of subsidized housing where priority in tenant selection is given to community residents and where the replacement demand is composed primarily of elderly and young couples, the net increase in school children is often less than expected.

While the general pattern is fairly consistent from one study to another, the actual values vary significantly. The best estimate of the impact of a particular proposed development would probably be derived by examining the number of children residing in recently built housing of the same type and number of bedrooms in the same general area.

### 3. Other Public Services and Facilities

Residents of new housing may require an increased level of other public services and facilities, such as libraries, recreational facilities, public transportation, fire, police, solid waste collection and disposal, health, social services (including services specifically for youth or the elderly), and general government. The increased cost for many of these services tends to be directly related to the increased population or number of households. However, the level of demand for some of the services may depend in part on the ages or incomes of the new residents.

### 4. Overall Municipal Expenditures for Additional Infrastructure and Services

Increased municipal expenditures due to new housing are the sum of the increased expenditures for the components discussed above -- utilities and local streets and roads (to the extent they are paid for by the municipality), education, and other public services and facilities.

While it might appear that estimating increased costs would be fairly straight forward, there are in fact many theoretical and methodological problems. These include such considerations as: (1) whether to consider incremental or average cost when estimating the fiscal impact of a proposed development (if there is excess capacity in the school system, for example, new housing may add very little to the community's educational costs -- for less than the average cost per existing pupil); (2) to what extent increased expenditures for infrastructure and services depend on "economies of scale" and therefore are more related to the town's total population than to its growth rate; (3) the possibility that new and old residents will differ in their preferences for services; (4) the possible benefits for all residents of improved services, such as a larger library or schools with improved teaching aids; (5) to what extent municipal expenditures prompted by a new development will also benefit residents of existing or future developments, and therefore should not be attributed solely to that one development; and (6) to what extent increased expenditures are determined by the speed with which new growth takes place, rather than by the absolute amount of residential growth.\* (Moderate growth that is properly planned for may increase municipal costs much less significantly than the same amount of housing produced in a rapid spurt unanticipated by planning.)

\* See Muller, Fiscal Impacts of Land Development.

## B. MUNICIPAL REVENUE AS A RESULT OF NEW HOUSING

While new housing adds to municipal costs, it also increases local property tax revenues. Direct increases result from the taxes paid on the new housing itself and indirect increases can result from commercial development that may arise to meet the demands of the increased housing population. New housing also increases municipal revenue from automobile excise taxes and, in some cases, increases municipal revenues from fees.

An underlying consideration in the impacts new housing can have on revenues is how it affects State aid to municipalities. Present formulas take into account such factors as equalized valuation, population, and number of school children, which are directly affected by new housing construction. Future changes in these state aid formulas could change the fiscal impact of housing development on particular types of communities.

## C. IMPACTS ON THE ECONOMY

New housing can have significant impacts on the local and regional economies. Housing construction itself is a major industry which employs many people. The more housing that is being built, the healthier this sector of the economy will be. In addition, residents of new housing patronize local and area businesses and thus tend to improve economic conditions.

## D. NET FISCAL BENEFIT/COST TO MUNICIPALITY

The net fiscal impact of new housing on a municipality is a "balance sheet" -- the weighing of the increased annual cost to the municipality (for education, utilities, etc.) against the increased municipal revenue due to the new construction.

A number of studies have been made of the net cost or benefit to the municipality of different types of development.\* In general, apartments and townhouses tend to "pay their own way" or provide a surplus. Single family homes, especially with large numbers of bedrooms, often result in a net cost to the municipality, except when they are of very high value.\*\* This is primarily because single family houses, and multifamily housing units with larger numbers of bedrooms, tend to have more children of school age to place demands on the school system. A New Jersey study found that most apartment developments, including those with a mix including three-bedroom units, can easily be absorbed without fiscal harm in most municipalities.

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\* See, for example, Levin, "Cost Revenue Impact Analysis;" Housing and Suburbs; and Stuart and Teska, "Who Pays for What: A Cost-Revenue Analysis of Suburban Land Use Alternatives."

\*\* Housing which results in a net cost in the short run may, however, generate surplus revenue after the children leave the local school system.



Subsidized apartments, especially for families, probably do not provide the same fiscal benefits as other apartments -- in large part because subsidized family apartments tend to have more children per unit and because municipalities do not always receive full property tax revenues from them. Since no one municipality should be expected to have an unusually large increase in subsidized family apartments, any deficit from subsidized housing can be outweighed by surpluses from other multifamily housing.

The results of studies vary, however, both because of different methodologies and because factors differ from one state to another and from one community to another. For example, one important factor is the percentage of school costs paid by the state rather than by means of the local property tax.

Another significant factor is the existing equalized tax rate in the town. Even though the cost of a new development of a certain value may be the same in two towns, the revenue from the development will be less in the town with a lower equalized tax rate. Thus, on balance, the development might provide a surplus for one town but a deficit for the other.

The most accurate estimates of the fiscal impact of housing development on a community can perhaps best be computed locally by determining the capacity of the school system, the average number of children in various types of units in the area, the local tax rate, etc. There is considerable danger in relying on simulated data, such as derived in The Costs of Sprawl,\* since such data ignores the many variations found between different situations and is isolated from the complexities found in any actual case. Furthermore, the fiscal impact of a specific development cannot be assessed in and of itself, but only in the context of the broader fiscal dynamics of the municipality and all other development taking place.

Overall, however, a town or city can meet its share of the regional housing need and still avoid a net fiscal loss from new housing by providing for a mix of housing types and prices, and by encouraging relatively high density clustered development. Any fiscal loss from single family homes or apartments with many bedrooms can be balanced or outweighed by the fiscal benefits from non-residential development and from apartments and homes with fewer bedrooms.

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\* Real Estate Research Corporation, The Cost of Sprawl, Detailed Cost Analysis.



### III. ENVIRONMENT

One of the greatest fears of many municipalities and their present residents is that new housing construction will damage the environment. In fact, in the past many developments have resulted in environmental problems -- flooding, damage to wetlands, or the misuse of unique areas, for example. There is, however, a need for new construction in a range of densities, housing types, and prices, in order to meet a portion of the regional need for housing. With certain planning measures such as those discussed below,\* carried out in a manner that does not significantly increase the cost of housing to the consumer, housing can be provided throughout the region without significant harm to the environment. The goals of environmental quality and sufficient housing sometimes seem to be in conflict, but an acceptable balance often can be drawn without undermining either goal.

The density,\*\* pattern, and location of development are probably the most significant factors which can be modified to minimize the damage of housing construction to the environment. More generally, the impact of a particular development on the environment often depends on land use and environmental regulations, the extent to which the layout and design take account of the environment, site improvements, and the infrastructure (such as sewers) provided. To ensure that developers live up to their promises, communities may decide to enact such procedures as posting of performance bonds or site plan review.

The principal components of environmental quality include:

#### 1. Air Pollution

- Pollutants from private automobiles: To the extent that a development pattern or location facilitates the use of mass transit; makes it possible to walk to stores, schools, work, etc.; or shortens the journey to work; this form of pollution will be minimized. On the other hand, poorly planned streets or land uses can cause congestion, which in turn results in additional pollution.
- Pollutants from residential heating (oil, natural gas, etc.) depend primarily on the amount and type of fuel used for heating (see Energy section below). Concentration of pollutants depends on density and such other factors as topography and wind direction.

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\* Due to the limited space available, these measures can be only briefly mentioned. A number of the references listed at the end of this paper deal with these issues at much greater length.

\*\* Density, in this discussion, refers to the type of structure used to house a certain number of households, rather than the overall density of the community.

## 2. Water Pollution and Erosion

- Sediment from erosion: For a given number of units, erosion tends to be minimized in well planned higher density developments which require the development of less acreage. Erosion also depends on the topographical features of the site.
- Pollutants and increased risk of flooding from storm runoff: This problem tends to be minimized in well planned cluster developments that minimize the amount of paved area per unit and carefully consider the least environmentally sensitive land to build on, preserving the remainder as common open space.
- Pollution from septic systems: The use of septic systems rather than sewers increases the risk of water pollution, but properly designed systems in appropriate soils are likely to cause few problems, at least in the short run, and they can have the advantage of recharging the local water table. Sewers may, however, be required in the long run.
- Other techniques for avoiding water pollution problems from development include floodplain and wetland protection districts, aquifer protection districts, stream buffer districts, and watershed protection districts. Before any of these techniques are implemented, their impact on housing cost and production levels must be carefully evaluated.\*

## 3. Noise

- Noise -- especially from traffic, construction, and other residences -- tends to be more of a problem in denser areas. Noise pollution can be alleviated to some extent by buffers, setbacks, and site layouts that maximize the distance of residences from principal noise producers.

## 4. Vegetation and Wildlife

- For a given number of units, higher density and cluster development may permit the preservation of significant tracts of land, minimizing the disruption of habitats. Too great a density may, however, eliminate vegetation or wildlife habitats.

## 5. Visual Effects

- The visual impact of various development patterns is to a large degree one of personal preference. On one hand, relatively dense developments can be designed to permit the retention of visually pleasing natural features. Furthermore, some people prefer the appearance of relatively high density development, especially if it fits in well with its environment.

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\* The MAPC Water Quality Project can provide detailed information on these and other techniques.

On the other hand, some people prefer the appearance of less dense developments. In fact, one of the principal reasons for restrictions on apartments in many suburban communities is the desire of existing residents to maintain a fairly uniform looking community. Apartments and townhouses are sometimes viewed as "urban intruders" in a "rural" community. Extremely large scale projects are sometimes justifiably criticized for their visual effects. Well designed apartment and townhouse developments, however, can be attractive, especially when their construction permits preservation of nearby open space, and may actually provide a greater sense of "village" than large lot single family developments.\*

#### 6. Open Space

- New housing can consume previously undeveloped land. Preservation of the most significant open space and encouragement of medium density development can, however, prevent the loss of open space with unique qualities or open space required to meet the needs of the population.

### IV. ENERGY AND OTHER NATURAL RESOURCES

The pattern of housing development may affect the level of consumption of various natural resources. Water consumption is largely a function of number of households, household size, and household type. However, cluster developments may use somewhat less water because of a decreased need for lawn sprinkling.

Energy use for residential heating and air conditioning can be significantly lower in higher density buildings, which have less outside exposure per unit, as opposed to lower density and detached housing. Residential energy use can be somewhat decreased by proper siting and insulation.

Gasoline use will be less if residences are easily accessible to mass transit; if it is possible to walk to work, schools, shopping, etc., as may be the case in some high density or planned unit developments; or if residences are closer to work places so that driving distances are minimized.

### V. TRANSPORTATION

The pattern of housing development is a major factor in determining traffic and mass transit usage patterns. A relatively dispersed regional development pattern is likely to result in a greater use of automobile transportation and will decrease the potential for use of public transportation.

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\* See, for example, Norcross, Townhouses and Condominiums.



## VI. SOCIAL IMPACTS ON MUNICIPALITY AND REGION

### A. EXISTING NEIGHBORHOODS AND NEIGHBORHOOD ENVIRONMENTS \*

Much of the future housing construction in the Boston region will be a filling in process in already predominantly settled areas, rather than on large tracts of vacant land. As a result, the potentially major impact of housing development on existing neighborhoods will be highly significant.

It is very difficult to generalize about the exact nature of such impact. The actual construction process may or may not significantly disrupt the neighborhood. A new apartment building or group of townhouses might disrupt a particular neighborhood of single family houses, while similar structures in another neighborhood of single family houses might provide visual variety and character or help stabilize the neighborhood by demonstrating investor confidence.

New residents can overcrowd the local school or place undue demands on social service programs, but new residents can also provide new customers for local businesses, make possible the expansion of educational or social service programs, eliminate the need to close a local school with low enrollment, or provide skills to the community.

New housing can increase land and house values and rents, with detrimental effects on existing renters in the neighborhoods but with possible beneficial effects on property owners.

Often, the planning and design of the particular building significantly affects its impact on the neighborhood. Above all, it is important that the potential impact -- negative and positive -- of a particular development on a particular neighborhood be carefully considered in advance of construction.

The Metropolitan Area Planning Council's work during the coming months will be addressing the difficult issues of revitalizing existing neighborhoods without harming existing residents.

### B. SOCIO-ECONOMIC COMPOSITION OF MUNICIPALITY

Residents of new housing may in the long run affect the socio-economic composition of the community. Such change is unlikely to result from only a few developments, but would depend on a long term pattern of development in the community. Any town's reasonable share of the new housing construction in the region, in a range of prices and types, is unlikely to have a significant effect on the town's overall composition.

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\* Most research on impacts of development has dealt with housing built on vacant land in relatively suburban locations. Such development is the focus of most of this paper. The social impacts of housing construction on existing neighborhoods are very important but also extremely difficult to analyze and predict; they can only be touched on in this section.

### C. INFLUX OF "DIFFERENT" RESIDENTS

Some residents also fear that residents of new housing, especially apartments or lower priced housing, will be "different," and that this will damage the community. A New Jersey study of apartments in suburban communities found that such fears are generally unwarranted.\* The study concluded that the implicit goal of some present residents of freezing social change at some point in time is not feasible, but that most new residents are not significantly "different" from existing ones.

In many cases residents of new apartments are very similar to present residents during past or future stages in their lives. A Weymouth study\*\* concluded that apartment dwellers, particularly in garden apartments, tend to have social and economic characteristics similar to those of single family house residents in the Town.

### VII. OVERALL IMPACT ON REGION

On the premise that the cities and towns of the region must accommodate the region's need for new housing, this paper has examined ways new housing can be accommodated while minimizing negative impacts and encouraging positive impacts on local communities. Emphasis has been placed on factors considered important from the perspective of local communities trying to meet the need. However, some factors considered important at the municipal level are not as relevant at the regional level. For example, the number of bedrooms per housing unit has an impact on municipal costs to the extent that it correlates with the number of school children to be educated by the municipality, but the number of bedrooms in new housing constructed in a community is unlikely to significantly affect the number of school children in the region as a whole.

Similarly, there are factors that may impact the local level in one way but have an opposite or different effect on the region as a whole. For example, developments of small, high rent apartments, which pay high property taxes but have relatively low demands for services, may be fiscally beneficial to suburban communities. They can provide greater housing choice, increasing the availability of a range of housing for the residents of the region. On the other hand, construction of such housing in significant amounts in the suburbs could cause an increasing number of higher income residents to migrate from the cities, leaving the cities in the unfair position of having to provide services to a greater proportion of the region's lower income residents from a diminished tax base. This would compound the fiscal difficulties of cities and have a detrimental effect on the entire region.

As another example, a housing development proposed in a community with relatively little existing infrastructure may be beneficial to the community and to consumers of the new housing, but it might be more beneficial and economical for the region as a whole if existing housing were conserved or rehabilitated and new construction were placed in areas where investments in infrastructure have already been made or where infrastructure extensions are planned.

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\* Housing and Suburbs

\*\* Weymouth Planning Board, Impact of Apartments in Weymouth.

## VIII. CONCLUSIONS

This paper has examined the impacts of new housing on the community in which it is located and on the region as a whole. Housing can have many impacts, positive and negative, on the fiscal condition of the municipality, the environment, energy and natural resources, transportation, and the social fabric.

The Boston region is facing a need for many new housing units, in a range of densities, housing types, and prices, during the coming decades. There will have to be levels of construction twice as high as at the present time. This need must be met in the cities and towns of the region. The overall conclusion that can be drawn from this paper is that the housing need of the region can be met, by sharing new construction throughout all municipalities of the region, without imposing significant net negative impacts on any one municipality or on the region as a whole. This can be accomplished by such approaches as clustered development, medium rather than low density, encouragement of a mixture of housing types, and consideration of potential impacts in advance of development.





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